Invitation for Comments on "Short List" Expert Consultant Candidates for the Clean Air Scientific Advisory Committee (CASAC) CASAC Ozone Review Panel EPA Science Advisory Board (SAB) Staff Office

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The EPA Science Advisory Board (SAB) Staff Office is forming the **Clean Air Scientific Advisory Committee (CASAC) Ozone Review Panel** (Panel). Nominations for technical experts to supplement the existing statutory CASAC membership were requested in the *Federal Register* (68 FR 35212) on June 12, 2003. Information on the CASAC and the Panel and the nomination process appear in the above-referenced *Federal Register* notice and this SAB Web site (http://www.epa.gov/sab/panels/casacorpanel.html). Pursuant to the *Federal Register* notice, recognized, national-level experts were sought in one or more of the following seven disciplines:

(a) Atmospheric Science. Expertise in physical/chemical properties of ozone and other photochemical oxidants, their precursor substances, and atmospheric processes involved in the formation, transport, and degradation of ozone and other photochemical oxidants in the atmosphere, including interaction with global climate and stratospheric ozone. Also, expertise in the evaluation of natural and man-made (anthropogenic) sources and emissions of precursors of tropospheric ozone and other photochemical oxidants, pertinent monitoring/measurement methods for such substances, and spatial/temporal trends in atmospheric concentrations of them.

(b) Exposure and Risk Assessment/Modeling. Expertise in measuring human population exposure to ozone and/or in modeling human exposure to ambient and indoor pollutants. Also, expertise in human health risk analysis modeling for ozone or other pollutants causing respiratory and/or other non-cancer health effects.

(c) Ecological Effects and Resource Valuation. Expertise in evaluation of: patterns of exposure to ozone and/or other photochemical oxidants of ornamental and/or agricultural plants and/or natural ecosystems and their components; effects of ozone and other photochemical oxidants on natural ecosystems (especially terrestrial) and their components (both flora and fauna), ranging from biochemical/sub-cellular effects and identification of indicators of pathophysiological effects at the individual plant level, to effects on species and populations, on up to include impacts on increasingly more complex (*e.g.*, landscape) levels of ecosystem organization. Also, expertise in (i) ecosystem risk assessment and (ii) ecological resource valuation/economics.

(d) Dosimetry. Expertise in conducting and/or evaluation of the dosimetry of animal and human subjects, including identification of factors determining differential patterns of inhalation and/or deposition/uptake in respiratory tract regions that may contribute to differential susceptibility of human population subgroups and animal-to-human dosimetry extrapolations.

(e) Toxicology. Expertise in conducting and/or evaluation of experimental laboratory animal studies of the effects of ozone and/or other photochemical oxidants on respiratory and non-respiratory (*e.g.*, lung defense/other immune function mechanisms) endpoints.

(f) Controlled Human Exposure. Expertise in conducting and/or evaluation of controlled human exposure studies of the effects of such substances on healthy and compromised (having pertinent preexisting chronic disease, *e.g.*, asthma) human adults and children, including medical doctors (M.D.) with experience in the clinical treatment of asthma.

(g) Epidemiology and Biostatistics. Expertise in epidemiological evaluation of the effects of exposures to ambient ozone and/or other major ambient air co-pollutants (*e.g.*, particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide) on human population groups, including effects on mortality and/or morbidity (*e.g.*, respiratory symptoms, lung function decrements, asthma medication use, respiratory-related hospital admissions) endpoints. Also, expertise in associated biostatistics and/or health risk analysis (including Bayesian statistical approaches)

The SAB Staff Office has reviewed the nominations and identified 24 candidates to supplement CASAC members on the CASAC Ozone Review Panel. Brief biographical sketches ("biosketches") on these expert consultant candidates are provided below. *We hereby invite comments from members of the public for relevant information, analysis or other documentation that the SAB Staff Office should consider in the selection of the Ozone Review Panel.*

Any information furnished by the public in response to this web site posting will be combined with information already provided by the candidates, and gathered independently by the SAB Staff Office. Prior to final panel selection, the combined information will be reviewed and evaluated for any possible financial conflict of interest or a possible appearance of a lack of impartiality. The information will also be used to ensure appropriate balance and breadth of expertise needed to address the charge to the Panel. The SAB Staff Office Director makes the final decision concerning who will serve on the Ozone Review Panel

Please e-mail your comments no later than February 27, 2004 to Mr. Fred Butterfield, CASAC Designated Federal Officer, at: butterfield.fred@epa.gov.

CASAC OZONE REVIEW PANEL EXPERT CONSULTANT CANDIDATES

Dr. Michael Brauer

Dr. Michael Brauer is a Professor in the School of Occupational and Environmental Hygiene at the University of British Columbia (UBC). He has joint appointments in the Department of Medicine (Respiratory Division) and the Atmospheric Science Programme at UBC. He holds a B.A. in Biochemistry and Environmental Sciences (1986) from the University of California, Berkeley; and received his Sc.D. in Environmental Health (1990) from the Harvard University School of Public Health.

Dr. Brauer is the recipient of the following awards: (1) Wolfe and Ghita Churg Foundation, W.H. Thurlbeck Prize for Research in Lung Disease (1999); (2) American Industrial Hygiene

Association, Indoor Environmental Quality Committee, Best paper award (1998); (3) American Lung Association, Career Investigator (1997); (4) Medical Research Council of Canada/British Columbia Lung Association, Scientist Award (1997), Research Scholarship (1992); and (5) Michigan Industrial Hygiene Society, Best paper award (1997).

Dr. Brauer's research emphasis is on the assessment of exposure and health impacts of air pollution. He has participated in studies in the U.S., Canada, Mexico, Asia, eastern and western Europe. Specific areas of research interest include: assessment of exposure to air pollution from mobile sources, air pollution in developing countries, particulate air pollution, indoor air pollution, and biomass air pollution.

Dr. Brauer's current and recent professional service includes: (1) International Joint Commission, Air Quality Advisory Board (2000-present); (2) Mickey Leland National Urban Air Toxics Research Center, Scientific Advisory Panel (1999-present); (3) Canadian Institutes of Health Research. Public, Community and Population Health Grants Committee (2001-present); (4) External Science Advisory Committee, EPA Northwest Particulate Matter Center (2003-present); (5) Institute of Medicine, Committee on Gulf War and Health III (2003-4); (6) National Research Council/Royal Society of Canada, NARSTO particulate matter assessment tri-national review committee (2002); (7) U.S. Environmental Protection Agency, Science Advisory Board. Interim Assessment of Particulate Matter and Health Research Center Program (2002); (8) Health Effects Institute, Review Panel, Particle Epidemiology Reanalysis Project (1999-2000); *ad hoc* reviewer (1998-present); and (9) Conference co-Chair, ISEA/ISEE 2002 International Conference, International Society for Environmental Epidemiology and the International Society of Exposure Analysis (2002).

Dr. Brauer's sources of recent (past 2 years) grant and/or other contract support funding include: the Canadian Institutes of Health Research; the National Cancer Institute of Canada; Health Canada; the Michael Smith Foundation for Health Research; the Workers Compensation Board of B.C.; the North American Commission for Environmental Cooperation; Environment Canada; the Greater Vancouver Regional District; the British Columbia Ministry of Water, Land, and Air Protection; and the B.C. Lung Association.

Ms. Lauraine G. (Laurie) Chestnut

Ms. Laurie Chestnut, a managing economist at Stratus Consulting, Inc., is an economist who specializes in the quantification and monetary valuation of human health and environmental effects associated with air pollutants. Ms. Chestnut received a B.A. in economics from Earlham College, Richmond, Indiana, in 1975, and an M.A. in economics from the University of Colorado, Boulder, in 1981. She has 22 years of experience with Stratus Consulting and its predecessors working for clients including the U.S. Environmental Protection Agency, the California Air Resources Board, Environment Canada, the World Bank, the Asian Development Bank, the South Coast Air Quality Management District, the American Lung Association, and the Clean Air Task Force quantifying the damages of air pollution, including human health effects, visibility aesthetics, materials damages, and crop damage.

Ms. Chestnut has conducted original economic and survey research to estimate the value to the public of protecting human health and visibility aesthetics from the effects of air pollution. She

has developed quantification models to estimate the health benefits of reductions in air pollutants that have been used to assess the benefits of provisions of the Clean Air Act in the U.S., proposed Canadian air quality standards, air quality standards in Bangkok, and elsewhere.

Ms. Chestnut has published articles related to this work in *Land Economics*, *Environmental Research*, *Journal of the Air and Waste Management Association* and *Journal of Policy Analysis and Management*, and as chapters in the following titled books: *Valuing Cultural Heritage*, *Air Pollution and Health*, and *Air Pollution's Toll on Forests and Crops*. She managed an epidemiology and economic study of the health effects of particulate air pollution in Bangkok, working closely with the Thai Pollution Control Department, the School of Public Health at Chulalongkorn University, and the World Bank. Ms. Chestnut co-authored publications on the Bangkok studies in the *Journal of the Air and Waste Management Association*, *Environmental Health Perspectives*, *American Journal of Agricultural Economics*, and *Journal of Exposure Analysis and Environmental Epidemiology*. She is a member of the Association of Environmental and Resource Economists and of the Air and Waste Management Association. Ms. Chestnut currently serves on the EPA Science Advisory Board's Advisory Council on Clean Air Compliance Analysis.

Ms. Chestnut's sources of recent grant and/or other contract support funding include: (1) "Economic valuation of health risks associated with criteria air pollutants and air toxics," a U.S. EPA-funded cooperative agreement with Cornell University on which Stratus Consulting was a subcontractor and she was a project principal investigator (PI); (2) "Benefits assessment of ozone generator regulations," a contract funded by Health Canada to examine potential health benefits of regulatory limits on indoor ozone generators for residential use; (3) "Economic valuation of hospitalizations associated with exposures to particulate matter and ozone," a grant to San Diego State University, on which Stratus Consulting was a subcontractor and Ms. Chestnut was a project PI, funded by the California Air Resource Board; and (4) "Benefits assessment update for Title IV," a contract funded by the U.S. EPA, Clean Air Markets Division, examining the health and welfare benefits of Title IV required reductions in SO_2 and NO_x emissions. (Note: This latter work focuses on expected reductions in PM2.5 concentrations; potential ozone-related benefits are not being estimated at this time.)

Dr. William (Jim) Gauderman

Dr. Gauderman is Associate Professor of Preventive Medicine at the University of Southern California (USC). He is currently director of the biostatistics core for an NIH-funded program project grant entitled "Genetics, Air Pollution and Respiratory Effects in Children and Young Adults." This project is focused on determining whether air pollution in southern California is associated with permanent deficits in lung function and with increased risk of asthma, and whether these effects are magnified in genetically susceptible subgroups. Dr. Gauderman is also principal investigator of an NIH-funded research project entitled "Statistical Approaches to the Study of Gene-Environment Interaction." In this work, he has developed statistical methods for finding and characterizing genes that interact with environmental factors to cause disease and other complex human traits. Dr. Gauderman also collaborates with many investigators in the design and statistical analysis of several studies, including studies of colorectal and breast cancer, and studies focused on assessing exposure to air pollution.

Dr. Gauderman has published 68 articles in peer-reviewed scientific journals, including journals that focus on statistical methods, epidemiology, and respiratory health. Two of his papers, related to the association between air pollution and children's lung function development, have demonstrated that exposure to air pollution can have long-term effects on children's respiratory health. This work has had a significant impact in both the scientific and regulatory communities.

Dr. Gauderman received a B.A. in mathematics from California State University, Fullerton in 1986, an M.S. in biometry from USC in 1988, and a Ph.D. in biometry from USC in 1992. In addition to the above-mentioned NIH-funded projects, Dr. Gauderman is also supported through December, 2003 on a contract from the California Air Resources Board. This contract has supported The Children's Health Study, a 10-year cohort study initiated in 1993 to study the effects of air pollution on children's respiratory health. The program project grant mentioned above is based largely on continued follow-up of this Children's Health Study cohort. Dr. Gauderman also has additional support to collaborate on other health-related research projects, including support from NCI, NIEHS, NHLBI, and EPA.

Dr. Mark Fenn

Dr. Mark Fenn has worked as a research scientist with the USDA Forest Service, Pacific Southwest Research Station (PSW) in Riverside, CA since June 1986. He received a B.S. in Agriculture from the University of Arizona in 1981, and a Ph.D. in Plant Pathology from the University of California, Riverside in 1986. Dr. Fenn's areas of expertise and research activities and interests include: nitrogen deposition and ecological effects of air pollutants, and interactive effects of ozone and nitrogen deposition, with an emphasis on the western United States and the Valley of Mexico.

Dr. Fenn is a member of the Ecological Society of America, the North American Air Pollution Workshop Group, the Atmospheric Changes and Forests Working Group of the North American Forestry Commission, the International Union of Forest Research Organizations, and the American Geophysical Union. He has been lead author on several publications reviewing what is known of nitrogen deposition effects on natural ecosystems in North America and in western North America. Two publications received the Distinguished Publication Award given by the PSW Forest Service Research Station and another has recently been nominated. In 2002, Dr. Fenn was primary editor of a volume summarizing many years of research on urban air pollution effects on forests surrounding Mexico City. Other important review publications focus on the combined effects of ozone and nitrogenous pollutants within the context of multiple ecosystem stressors. He has authored 64 scientific publications, mostly on the topic of air pollution and associated ecological and environmental effects. Dr. Fenn is considered an authority on nitrogen deposition impacts on western ecosystems.

Dr. Fenn has served on scientific advisory committees within the U.S. Forest Service, and air pollution-related advisory committees within the Department of Defense and the Ecological Society of America. He has also been invited to contribute to national assessments of air pollution impacts on natural resources in reports to Congress (National Acid Precipitation Assessment Program) and a national review of air pollution effects on drinking water from national forests and grasslands. His research has also been instrumental in providing research information for criteria documents and other government assessment reports related to ecological impacts from air pollution. In recent years, Dr. Fenn has received grants in support of air

pollution ecological research studies from various public funding agencies including the USDA Forest Service, the U.S. EPA, the National Park Service, and the State of California.

Dr. Henry Gong

Dr. Henry Gong, Jr., M.D., received his B.A. (Biology) from the University of the Pacific, Stockton, CA, and his M.D. in 1973 from the University of California at Davis. He then completed a Medicine residency at Boston University Medical Center and a Pulmonary Medicine Fellowship at the University of California at Los Angeles (UCLA). Dr. Gong remained on the full-time UCLA faculty for 15 years. He was the Associate Chief of the Pulmonary and Critical Care Medicine Division, UCLA Medical Center (1985-1992), and promoted to Professor of Medicine in 1989. Dr. Gong moved to Rancho Los Amigos Medical Center (RLAMC), Downey, CA, in 1992, where he has since been the Chief of the Environmental Health Service, an established research facility investigating the health effects of air pollution. Since 1992, he is/was the Chair of the Department of Medicine, Medical Director of Respiratory Therapy, and Chair of the Research Committee (IRB) and the Continuing Medical Education Committee at RLAMC, as well as a Professor of Medicine and Preventive Medicine, University of Southern California (USC).

Dr. Gong is an established, practicing Board-certified pulmonologist/internist with expertise in clinical asthma and altitude effects in patients with cardiopulmonary disorders. He has served on the Asthma Advisory Panel of Blue Cross of California since 1999. He was a Visiting Professor to Henry Ford Hospital and Medical Centers, Detroit, MI (June, 2000) and Singapore National University, Singapore (November, 2000). His long-time efforts in pollution-related health effects were recognized by his receipt of the 2000 Clean Air Award from the American Lung Association of California (September, 2000) and the Carl Moyer Award from the Coalition for Clean Air (May, 2001).

Dr. Gong has written over 250 papers, chapters, or books on respiratory-related and air pollution topics, including ozone-related health effects. He was a key contributor to the monograph "Considerations for Diagnosing and Managing Asthma in the Elderly" (February, 1996, Division of Lung Diseases, NHLBI, NIH). Dr. Gong is/was on the Editorial Board of several journals (*Journal of Clinical Pharmacology*; *The American Journal of Critical Care*; *Archives of Environmental Health*) and a reviewer for over 20 clinical and environmental journals, including the *New England Journal of Medicine*, *American Journal of Respiratory and Critical Care Medicine*, *Chest*, *Journal of Clinical Allergy and Immunology*, *Annals of Internal Medicine*, *Environmental Research*, *Archives of Environmental Health*, *Journal of the Air & Waste Management Association*, and *Environmental Health Perspectives*. In addition, he has been a consultant or reviewer for numerous State, national, and other organizations, such as the Electric Power Research Institute, Southern California Edison, University of California Research Programs, U.S. Environmental Protection Agency (EPA), National Institute of Environmental Health Sciences (NIEHS), Health Effects Institute (HEI), and the Air Quality Advisory Committee of the California Environmental Protection Agency.

Dr. Gong served on the Special Review Committee on "RFA 92-04, Ozone: Mechanisms of Action" (NIEHS, March, 1993) and as a Consultant/Contributor to the Air Quality Criteria for Ozone and Related Photochemical Oxidants (Revision), Environmental Criteria and Assessment

Office (EPA, 1993-1994), as well as an external peer reviewer of the EPA's long-term Asthma Research Strategy (2000). Dr. Gong's research program has been supported by the U.S. EPA, NIEHS, California Air Resources Board, Electric Power Research Institute, American Lung Association, pharmaceutical firms, and other organizations. He is currently the Director and Principal Investigator of the five-year Southern California Center for Children's Environmental Health and Disease Prevention Research: Respiratory Disease and Prevention, which is co-funded by the NIEHS and U.S. EPA. Other recently-funded research involves controlled human exposures to concentrated ambient particulates and diesel exhaust (from Health Effects Institute and the EPA-supported Southern California Particle Center and Supersite) and to particulates with nitrogen dioxide (EPA). He serves on local and state air pollution committees, such as the PM10 Task Force and the Asthma and Outdoor Air Quality Consortium (South Coast Air Quality Management District).

Dr. Gong is a member of numerous professional organizations or societies, such as the American Thoracic Society and Western Society for Clinical Investigation. Dr. Gong was President of the California Chapter of the American College of Chest Physicians in 1991-92. He is currently a Fellow and former Governor of Southern California of the American College of Chest Physicians.

Dr. Paul J. Hanson

Dr. Paul J. Hanson is a Senior Research and Development Scientist of the Environmental Sciences Division, Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee. He graduated summa cum laude with a B.A. degree in biology from St. Cloud State University, St. Cloud, Minnesota, in 1981. Dr. Hanson also received M.S. and Ph.D. degrees from the University of Minnesota, St. Paul in the fields of plant and forest tree physiology, in 1983 and 1986, respectively.

Dr. Hanson has conducted research on the impacts of air pollutant oxidants (ozone and hydrogen peroxide) on forest plant physiology and growth, the deposition of gaseous nitrogen compounds to plant surfaces, and the exchange of mercury vapor between terrestrial surfaces and the atmosphere. As a part of his work on the impact of ozone on northern red oak photosynthesis, ozone exposure and uptake response curves were evaluated. Dr. Hanson's current research focuses on the impacts of climatic change on the physiology, growth, and biogeochemical cycles of eastern deciduous forest ecosystems. He has authored or co-authored over 100 journal articles and book chapters, and has recently co-edited (and authored) a book titled "North American Temperate Deciduous Forest Responses to Changing Precipitation Regimes" published in 2003 as volume 166 of the Springer Ecological Studies series. Dr. Hanson was a contributing author to EPA's Air Quality Criteria Document (AQCD) for Particulate Matter (1994-1996), and the AQCD for Oxides of Nitrogen (1988-1990).

Dr. Hanson served as an Associate Editor of the Journal of Environmental Quality for six years (1995-2000), and is a long-standing member of the editorial review board of Tree Physiology. He is a current member of the U.S. Department of Energy's National Technical Advisory Committee for the National Institute of Global Environmental Change (NIGEC), and has served on a number of peer-review panels for the evaluation of scientific proposals. Dr. Hanson

received the 1995 Distinguished Scientific Achievement Award from the Environmental Sciences Division, Oak Ridge National Laboratory.

Dr. Hanson's recently-funded grant proposals are as follows: (1) Regulation of carbon sequestration and water use in an Ozark Forest: Proposing a new strategically located Ameriflux tower site in Missouri; U.S. Department of Energy, 2003-2005; $1.4 million over three years; (2) Identifying Critical Thresholds for Plant/Ecosystem Response to Moisture Stress; U.S. Department of Energy, 2002-2004; $900,000 over three years; (3) Enriched Background Isotope Study (EBIS); U.S. Department of Energy, 2002-2004; $2.7 million over three years; (4) Mechanisms of forest ecosystem adjustments to altered precipitation: the Walker Branch Throughfall Displacement Experiment (TDE); renewal proposal 2002-2006; $2,200,000 over five years.

Dr. Meryl H. Karol

Meryl H. Karol, Ph.D., is a Professor and Associate Dean for Academic Affairs, Department of Environmental and Occupational Health, in the Graduate School of Public Health at the University of Pittsburgh. She received her B.S. in microbiology from Cornell University (1961) and her Ph.D. from Columbia University in immunochemistry (1967). Dr. Karol has been a tenured professor at the University of Pittsburgh since 1985. From 1991-1992, she was Visiting Professor of Medicine in the Institute of Occupational Medicine, University of Padova, Italy. From 1993-2000, Dr. Karol was Associate Department Chair at the University of Pittsburgh. In 2002, she was appointed Associate Dean for Research, and in 2003 assumed her current position as Associate Dean for Academic Affairs. She is also Co-Director of the Global Health Program.

As a toxicologist, Dr. Karol is particularly well-known for her studies of the immune response of the lung. She is a former president of the Society of Toxicology, USA (1994-95), was a director of the International Union of Toxicology (IUTOX) from 1995-1998, and is currently Secretary-General of IUTOX (1998-2004). Dr. Karol is a member of the American Thoracic Society, the American Public Health Association, the Pennsylvania Public Health Association, the American Association for the Advancement of Science (AAAS), and Sigma Xi. She is the recipient of numerous awards, including the Rachel Carson Award and Outstanding Contributor to Public Health.

Dr. Karol advises numerous academic, industrial and governmental organizations, including: NIH, EPA NRC, the U.S. Armed Forces, and the U.S. Congress, and has recently been appointed to the Environmental Advisory Committee for Gov. Tommy Thompson, Secretary of Health and Human Services, and the Advisory Committee for Pharmaceutical Science Division (FDA). Her recent grant support has come from the U.S. Department of Agriculture, the International Isocyanate Institute, Bayer Corporation, and the NIH (NIEHS, DHHS/PHS/CDC-NIOSH).

Dr. Michael T. Kleinman

Dr. Michael Kleinman is a Professor in the Department of Community and Environmental Medicine, College of Medicine, University of California, Irvine (UCI), and an Adjunct Professor of Social Ecology. In addition, he is the co-Director of the Air Pollution Health Effects Laboratory and Faculty Member of the UCI Center for Occupational and Environmental Health.

Dr. Kleinman holds a B.S. in Chemistry from Brooklyn College, City University of New York (1965), an M.S. in Chemistry from the Polytechnic Institute of Brooklyn (1971), and a Ph.D. in Environmental Health Sciences from New York University (1977).

Dr. Kleinman has been studying the health effects of exposures to environmental contaminants found in ambient air for more than 25 years. His research program examines the mechanisms by which inhaled toxic chemicals, alone and in mixtures, interfere with the cardiopulmonary system and with respiratory system defenses, using both laboratory animals and human subjects. Dr. Kleinman has studied the effects of ozone, alone and in combination with particles, with human volunteers as well as in animal models. His current studies focus on injury-induced oxidative stresses from endogenous and exogenous factors that can cause asthma, cardiopulmonary injury and exacerbate lung and heart diseases, and on the cardiopulmonary effects of concentrated ambient ultrafine, fine and coarse particles using geriatric rats and a mouse model of allergic airways disease.

Prior to joining the faculty at UCI in 1982, Dr. Kleinman directed the Aerosol Exposure and Analytical Laboratory at Rancho Los Amigos Hospital in Downey, CA. He has published 70 articles in peer-reviewed journals dealing with the uptake and dosimetry of inhaled pollutants in humans and laboratory animals, and effects on cardiopulmonary and immunological systems after controlled exposures to ozone and other photochemical oxidants, carbon monoxide and ambient or laboratory-generated aerosols. He recently chaired a National Academy committee to examine issues in protecting deployed U.S. military forces from the effects of chemical and biological weapons.

Dr. Kleinman is a consultant to the EPA Science Advisory Board (Health Effects Subcommittee) and currently serves as the Chair of the California Air Quality Advisory Committee, which reviews California's air quality criteria documents. He is a member of the Air and Waste Management Association, the American Association for the Advancement of Science (AAAS), the American Association for Aerosol Research, the American Chemical Society (ACS), Sigma Xi, and the New York Academy of Sciences.

Dr. Kleinman's sources of recent grant and/or other contract support funding include NIH, California Air Resources Board (CARB), U.S. EPA (Southern California Particle Center and Supersite), and the California EPA.

Dr. Sagar Krupa

Dr. Sagar Krupa is a Professor and former Director of Graduate Studies in the Department of Plant Pathology, University of Minnesota, St. Paul. He received his B.S. (Botany, Andhra University, India, 1959); M.S. (Plant Pathology, University of Wisconsin, 1968), and his Filosofie Doktor (Hab.) (Physiological Botany, Uppsala University, Sweden, 1971). Dr. Krupa's research is directed to integrating atmospheric processes (both wet and dry deposition, including source apportionment) to vegetation responses. His particular interest is ozone and modeling the dynamics of stochastic relationships between air pollutant exposures and plant responses.

Dr. Krupa is a Fellow of the Air & Waste Management Association (A&WMA). He has served that association in many capacities: Chairman, TE-2 Ecological Effects Committee; President,

Upper Midwest Section; Chairman, TE-Effects Division; and Group Leader, Environmental Management. Dr. Krupa is a member and past Chairman of the Technical Committee of the USDA Multi-State Research Project on "Characterization of Plant Responses to Ambient Ozone in the Northeastern U.S." He also served as the Science Coordinator and Chairman, Science Advisory Board, for the $5.3 million Alberta Government-Industry Acidic Deposition Research Program; as a technical consultant (UV-B, Radiation and Terrestrial Vegetation) to the select committee of the German Parliament on Protecting the Earth's Atmosphere; and to the UN Food and Agricultural Organization (FAO).

Dr. Krupa was a peer reviewer of the U.S. EPA's most recent Draft Air Quality Criteria Documents on "Particulate Matter" and on "Ozone and Other Photochemical Oxidants." He is an Associate Editor of the journal *Environmental Pollution* and Chief Editor of the book series "Developments in Environmental Science" (both published by Elsevier Science of the Netherlands). Dr. Krupa has published some 140 peer reviewed articles and 11 books.

During the last 5 years Dr. Krupa has served as a technical consultant to the West Central Airshed Society of Alberta, Canada Agriculture Program (a consortium of government, industry and the public sector) on evaluating the joint effects of multiple air pollutants (ozone, sulfur dioxide and the oxides of nitrogen) and climate variables on the productivity of alfalfa under ambient, real-world conditions. For the past two years, Dr. Krupa has served as co-principal investigator on a research project "Determining the source of water in a model window system using stable elemental isotopes" (funded by the State of Minnesota). During that period, his other research support on air pollutants has been through the Minnesota Agricultural Experiment Station.

Dr. Allan Legge

Dr. Allan Legge is currently President of Biosphere Solutions, an environmental consulting firm located in Calgary, Alberta, Canada. Prior to forming Biosphere Solutions in 1993, he was a Senior Research Scientist at the Kananaskis Center for Environmental Research at the University of Calgary from 1972 to 1990, and a Senior Research Officer in the Environmental Research and Engineering Department, Alberta Research Council from 1990 to 1993.

Dr. Legge holds a B.A. in Biology and Dramatic Arts which was received from Whitman College, Walla Walla, Washington in 1965, and a Ph.D. in Plant Genetics/Ecology from Oregon State University in Corvallis, Oregon in 1971. His areas of specialization are environmental toxicology/atmospheric chemistry, and he focuses on the evaluation and assessment of the effects of the air pollutants SO2,O3, H2S,NOx,HF, PM and saline aerosols on forests and agricultural ecosystems.

Dr. Legge has been a member of the EPA Science Advisory Board since 1985 and has served on the following: (1) Forest Effects Review Panel (Co-Chair), 1985; (2) Scientific and Technological Achievement Awards Subcommittee (STAA), intermittently from 1986 to 2002; and (3) Clean Air Scientific Advisory Committee (CASAC) as a consultant since 1994 on Review Panels dealing with Nitrogen Oxides, Ozone and Related Photochemical Oxidants, and Particulate Matter. He served as a member of the U.S. National Research Council Committee to Assess the North American Research Strategy on Tropospheric Ozone (NARSTO) from 1997 to

2000. Dr. Legge is an active member of the Air & Waste Management Association (AWMA), the Alberta Society for Professional Biologists, and the International Air Pollution Workshop. He was elected as a Fellow of the American Association for the Advancement of Science (AAAS) in 1992, and a Fellow of the AWMA in 2002.

Dr. Legge's primary sources of recent grant and/or contract support have been from resource extraction industries (oil and gas; cement) in Canada, Alberta Environment (provincial government), non-governmental organizations and legal firms.

Dr. Morton Lippmann

Dr. Morton Lippmann is a Professor of Environmental Medicine at the New York University (NYU) School of Medicine. He holds a Ph.D. (NYU, 1967) in Environmental Health Science, an M.S. (Harvard University, 1955) in Industrial Hygiene, and a B.Ch.E. (The Cooper Union, 1954) in Chemical Engineering. At NYU, he directs a research program on Human Exposure and Health Effects, and the EPA-supported Particulate Matter Health Effects Research Center.

Dr. Lippmann's areas of expertise and interest include human environmental exposure assessment and associated health effects, respiratory tract dosimetry, aerosol science and technology, and risk assessment. He has been the recipient of numerous awards for his research and contributions in aerosol science and pulmonary physiology, human exposure assessment and dosimetry, chemical transformations in the atmosphere, population studies of exposure-response relationships in occupational and community cohorts, and factors affecting the toxicity of airborne fibers.

Much of this research has been focused on specific chemical agents, notably ozone, sulfuric acid, and asbestos. Dr. Lippmann is a past President of the International Society of Exposure Analysis (1994-1995), past Chairman of: the ACGIH (1982-1983); the EPA Science Advisory Board's Executive Committee (2000-2001); EPA's Advisory Committee on Indoor Air Quality and Total Human Exposure (1987-1993); and EPA's Clean Air Scientific Advisory Committee (1983-1987). He has also served on the NIOSH Board of Scientific Counselors and with the American Conference of Governmental Industrial Hygienists, and he has also chaired and been a member of numerous National Research Council committees, including committees on the airliner cabin environment and the health of passengers and crew, synthetic vitreous fibers, measurement and control of respirable dust in mines, indoor pollutants, toxicity data elements, and in-vivo toxicity testing of complex mixtures.

Dr. Lippmann's publications include over 275 research and review papers in the scientific literature and two reference texts on environmental health science. He is currently the Director of the EPA-supported Particulate Matter Health Effects Research Center at NYU and also of an EPA-Cooperative Agreement with NYU on personal exposure of respiratory disease patients to particulate matter in ambient air. Dr. Lippmann received PM Health Effects Research grants from EPA and NIEHS grants for Environmental Health Sciences research, as well as an EPA Cooperative Agreement: Personal Exposure to PM.

Dr. Joe Mauderly

Dr. Mauderly is Vice President and a Senior Scientist of the Lovelace Respiratory Research Institute, an independent, nonprofit research organization in Albuquerque, New Mexico. He is also Director of the National Environmental Respiratory Center, a program funded by government and industry to understand the health effects of complex mixtures of air contaminants.

Dr. Mauderly holds his B.S. (1965) and D.V.M. (Doctor of Veterinary Medicine) (1967) from Kansas State University, Manhattan. He is a veterinarian who began his research career as a comparative respiratory physiologist. Dr. Mauderly's research has encompassed interspecies differences in lung function, lung aging, and responses to inhaled toxicants, hazards from a range of occupational and environmental air contaminants ranging from plutonium to diesel emissions, and (more recently) the contributions of individual air pollutants and sources, and their combinations, to the health burden from complex mixtures of air pollutants. He has authored/co-authored over 270 scientific papers, chapters, books, and technical reports. Dr. Mauderly previously chaired the EPA Clean Air Scientific Advisory Committee (CASAC) and continues to serve as a consultant to the CASAC Particulate Matter Review Panel. He is a member of the National Research Council Committee on Research Priorities for Airborne Particulate Matter. Dr. Mauderly recently chaired the NRC committee that reviewed the NARSTO Particulate Matter Assessment. He was also a member of the EPA Science Advisory Board committee that reviewed the Agency's latest National Air Toxics Assessment, and chaired an EPA workshop on risk assessment for polycyclic aromatic hydrocarbons.

Dr. Mauderly has held several offices in the Environmental and Occupational Health Assembly of the American Thoracic Society and the Inhalation Specialty Section of the Society of Toxicology. He holds adjunct professorships in Medicine and Pharmacology at the University of New Mexico, and serves on the advisory boards of several university research centers, the Mixed Exposures Working Group of the NIOSH National Occupational Research Agenda, and the editorial board of Experimental Lung Research.

Dr. Mauderly's sources of recent grant and/or other contract support funding include: (1) a program on the health hazards of engine emissions, that is funded by the DOE Freedom Car and Vehicle Technology Program of the U.S. Department of Energy Office of Energy Efficiency and Renewable energy; and (2) the National Environmental Respiratory Center, which is a joint government-industry program on the health impacts of complex mixtures of air pollutants funded by the U.S. Environmental Protection Agency, DOE (two offices), DOT (Federal highway Administration), California Air Resources Board, and several companies and trade associations, including American Chemistry Council, American Petroleum Institute, Hearth, Patio & Barbeque Assn., Japan Automobile Manufacturers Assn., Caterpillar, Cummins, Daimler-Chrysler, Deere, Detroit Diesel, Exxon-Mobil, Ford, General Motors, International Truck & Engine, Phillips Petroleum, Salt River Project, and Southern Company.

Dr. Roger O. McClellan

Dr. Roger O. McClellan received his DVM from Washington State University in 1960 and has more than 4 decades of experience in the fields of inhalation toxicology and risk assessment. He is the author of more than 350 papers and edited 10 books in these fields including the 2 leading texts on inhalation toxicology/respiratory toxicology. He is a Diplomate, by examination, of the American Board of Toxicology and American Board of Respiratory Toxicology and a Fellow of the Academy of Toxicological Sciences and Society for Risk Analysis. He currently is, or has been, an adjunct faculty member at 10 major research universities. Dr. McClellan is an elected member of the Institute of Medicine of the National Academy of Sciences.

Dr. McClellan currently works as an Advisor in Inhalation Toxicology and Human Health Risk Analysis from his home office in Albuquerque, NM. He divides his time between pro bono service and work for fee for service clients in government and the private sector. Dr. McClellan has served on numerous NRC Committees including Committee on Toxicology (Chair for 7 years), Committee on Environmental Justice, and the Committee that prepared "Science and Judgment in Risk Assessment." Dr. McClellan has served on numerous EPA Advisory Committees from the founding of EPA to the present under every EPA Administrator including: Chairing Environmental Health Committees and Clean Air Scientific Advisory Committee and the committees that reviewed the Cancer Risk Assessment Guidelines promulgated in 1986 and proposed for promulgation in 2003. He has served on previous CASAC panels reviewing each of the Criteria Pollutants including ozone. Dr. McClellan is currently serving on an Advisory Committee to the CDC Center for Environmental Health Research and on the DOE's Biological and Environmental Research Advisory Committee.

Dr. McClellan is a strong proponent of integrating information from multiple sources: epidemiological studies, controlled human exposure investigations, laboratory animal bioassays and mechanistic investigations to assess human health risks. His expertise in inhalation toxicology, inhalation dosimetry modeling, carcinogenesis, comparative medicine, biologically-based dose-response modeling, and quantitative risk assessment are directly relevant to review of the science base for ozone.

Dr. Maria T. Morandi

Dr. Maria Morandi is an assistant professor of Environmental Sciences and Occupational Health at the School of Public Health of the University of Texas at Houston. She holds a BS degree in Chemistry from the City College of New York (1978), and MS (1981) and Ph.D. (1985) degrees in Environmental Sciences from the Norton Nelson Institute of Environmental Medicine of New York University. Dr. Morandi is also certified in Industrial Hygiene (CIH) by the American Board of Industrial Hygiene.

Dr. Morandi's areas of expertise include assessment of indoor, outdoor and personal air concentrations of airborne contaminants in community and occupational environments, development of methods for personal exposure monitoring of gas and particle-phase airborne chemicals, evaluation of the effects from exposure to airborne particles and ozone on human and murine alveolar macrophages, and effects from exposure to airborne particles, ozone, and air toxics in children with asthma. She has also performed statistical modeling of PM sources. Dr. Morandi is a current member of the Research Strategies Advisory Committee of the EPA

Science Advisory Board (SAB), and the Board of Scientific Counselors (BOSC) of the National Toxicology Program (NIEHS). She is a member of the Chemical Exposures Working Group for the National Children Study (NCS) currently in the planning stages; this working group provides advice on exposure issues relevant to air pollutants and other environmental chemicals, including ozone, that may be important considerations for the NCS.

Dr. Morandi's sources of recent grant and/or other contract support funding include: (1) U.S. Environmental Protection Agency (several contracts on the use of passive dosimeters for monitoring indoor, outdoor and personal air concentrations of air toxics and a STAR grant on the effect of PM on murine and human alveolar macrophages); (2) the Mickey Leland National Urban Air Toxics Research Center (impact of exposure to airborne carbonyls, PM and ozone on children with asthma; (3) the Health Effects Institute (HEI) (a population-based exposure study); and (4) NIOSH (for training Industrial Hygienists).

Dr. Howard S. Neufeld

Dr. Neufeld is currently a full Professor in the Department of Biology at Appalachian State University, Boone, NC. Dr. Neufeld received his B.S. in Forestry from Rutgers University in 1975, his M.F. in Forest Sciences from the Yale School of Forestry and Environmental Science in 1977, and his Ph.D. in Botany from the University of Georgia in 1984. He was a post-doctoral fellow at New Mexico State University under Dr. Gary Cunningham from 1984-1985, working on the ecophysiology of range grasses and creosotebush. In 1985 Dr. Neufeld began an NRC post-doctoral appointment under Drs. Dave Tingey and Bill Hogsett at the EPA Lab in Corvallis, OR. While there, he worked on the effects of ozone on root growth of tree seedlings. After two years, Dr. Neufeld returned to the University of Georgia as a research coordinator in the Forestry School before accepting a position as Assistant Professor of Biology at Appalachian State University. Currently he is Professor of Biology and Past-President of The Association of Southeastern Biologists (ASB).

Dr. Neufeld's research expertise is in the area of plant physiological ecology, and has included work on desert plants and understory tree adaptations to shade. For the past 18 years, he has been active in air pollution effects research, including acidic deposition (rain and fog) studies on spruce trees and hardwoods of the eastern United States, and tropospheric ozone on native plants. From 1988-1992, Dr. Neufeld was the principal investigator of a National Park-U.S. EPA sponsored research project on the effects of ozone on plants native to Great Smoky Mountains National Park. These results have been published in a variety of journals, and additional papers are in preparation.

Dr. John M. Peters

Dr. John Peters is currently Hastings Professor of Preventive Medicine; Vice Chairman, Department of Preventive Medicine; and Director of the Division of Environmental Health at the Keck School of Medicine at the University of Southern California (USC). Since 1982, he has also been an Adjunct Professor of Epidemiology at the UCLA School of Public Health. Dr. Peters holds a B.S. (1957) and an M.D. (1960) from the University of Utah, and an M.P.H. (1964) and Sc.D. (1966) from Harvard University. His Board Certification is from the American Board of Preventive Medicine, Occupational and Environmental Medicine (1967).

Dr. Peters' society and professional affiliations include: the Advisory Panel on Preventive Medicine and the Advisory Panel on Occupational Medicine, California Medical Association; the American Academy of Occupational and Environmental Medicine (Fellow); the American Association for the Advancement of Science (AAAS); and the American Thoracic Society. Dr. Peters serves as Chairman, Scientific Advisory Committee to the DaimlerChrysler UAW National Joint Committee on Safety and Health (1988-present), and as Chairman, Boeing Scientific Committee (1999-present). In addition, Dr. Peters served on the Board of Scientific Counselors, National Institute for Occupational Safety and Health (NIOSH), from 1988-1991, and was a Member of the Advisory Council, South Coast [Southern California] Air Quality Management District, from 1988-1996.

Dr. Peters' area of expertise is environmental health and epidemiology, especially the effect of environmental exposures on health. His current research interest is in environmentally-caused cancer and environmentally-caused lung disease. Dr. Peters presently directs a large air pollution study in southern California involving more than 6000 children and young adults. Since 1996, he has directed the Southern California Environmental Sciences Center supported by the National Institutes of Environmental Health Sciences (NIEHS), and is the Principal Investigator on a large Program Project grant from NIEHS. Dr. Peters co-directs the Children's Environmental Health Center supported by EPA and NIEHS.

More specifically, Dr. Peters' sources of recent research grant funding for which he was Principal Investigator include: (1) California Air Resources Board (Epidemiologic Investigation to Identify Chronic Effects of Ambient Air Pollutants in Southern California), 1995-2003; (2) U.S. Environmental Protection Agency (Short-Term and Long-Term Exposure to Ozone and Particulate Air Pollution and Respiratory Disease), 1995-1999; (3) U.S. Army Medical Research and Community Development Committee (Magnetic Fields and Breast Cancer Risk), 1997-2002; (4) NIEHS (Environmental Exposures, Host Factors and Human Disease),1996-2006; (5) EPA (STAR Proposal) (Southern California Center for Airborne Particulate Matter), 1999-2000; and (6) NIEHS (Genetics, Air Pollution and Respiratory Disease in Children and Young Adults), 2002-2007. Those research grants for which he was Co-Principal Investigator are: (1) EPA (Children's Center for Respiratory Disease and Prevention), 1998-2003; and (2) National Institutes of Health (NIH) (Children's Center and Respiratory Disease and Prevention), 1998-2003. Dr. Peters also received several training grants from the National Institute for Occupational Safety and Health (NIOSH) from 1995-2000.

Dr. Armistead (Ted) G. Russell

Dr. Armistead (Ted) Russell is the Georgia Power Distinguished Professor and Coordinator of Environmental Engineering at the Georgia Institute of Technology. Professor Russell arrived at Georgia Tech in 1996 from Carnegie Mellon University, and has expertise in air quality engineering, with particular emphasis in air quality modeling, air quality monitoring and analysis. He earned his M.S. and Ph.D. degrees in Mechanical Engineering at the California Institute of Technology in 1980 and 1985, conducting his research at Caltech's Environmental Quality Laboratory. His B.S. is from Washington State University (1979).

Dr. Russell is currently on the National Research Council's Board of Environmental Studies and Toxicology, and has been a member of a number of the NRC committees, including chairing the

Committee to Review EPA's Mobile Model and chairing the committee on Carbon Monoxide Episodes in Meteorological and Topographical Problem Areas, and serving on the committee on Tropospheric Ozone Formation and Measurement, the committee on ozone forming potential of reformulated fuels and the committee on Risk Assessment of Hazardous Air Pollutants. Recently, he served on two EPA SAB subcommittees: the CASAC subcommittee on the National Ambient Air Monitoring Strategy (NAAMS) and the subcommittee on Air Quality Modeling Subcommittee of the Advisory Council on Clean Air Compliance Analysis. He was also a member of the EPA FACA Subcommittee on Ozone, Particulate Matter and Regional Haze, the North American Research Strategy for Tropospheric Ozone and California's Reactivity Science Advisory Committee. Previously he was on the EPA Office of Science, Technology and Policy's Oxygenated Fuels Program Review and various National Research Council program reviews, and a committee to review a Canadian NRC program.

Dr. Russell is a member of the Air and Waste Management Association, American Association for the Advancement of Science, American Society of Mechanical Engineering, Tau Beta Pi, Sigma Xi, and the American Association for Aerosol Research. He is Associate Editor of Environmental Science and Technology. Dr. Russell has won a variety of competitions for animations he has developed that depict the dynamics of pollutants have won a variety of prizes here and abroad, and his work was selected as a finalist for the prestigious Smithsonian Award for Computing in the Environmental Sciences. Recently, Prof. Russell led a multi-institutional effort to conduct air quality modeling of ozone, particulate matter and acid deposition to assist the Southern Appalachians Mountains Initiative to identify effective control strategies to improve air quality in Class I areas in the southern Appalachians. This work has been extended to detailed analysis of air quality strategies in Georgia, particulate matter modeling in the Southeast and Northeast, and development of a number of advanced numerical techniques for environmental modeling. For his service to National Research Council committees, he was recently selected as a National Associate of the National Academies.

Dr. Russell's funding comes from a variety of sources, including the FHWA (mobile source impacts on air quality), U.S. National Science Foundation (atmospheric modeling), NIH (air quality impacts on health), EPA (modeling, monitoring and field data analysis), DoD (biomass burning), various States (VOC reactivity, air quality modeling and field experimental studies) and state organizations, and the chemical (reactivity analysis), automotive (modeling) and utility (modeling, field studies) industries.

Dr. Elizabeth A. (Lianne) Sheppard

Dr. Sheppard is a Research Associate Professor in the Department of Biostatistics, and the Department of Occupational and Environmental Health Sciences. She holds a Ph.D. (1992) in Biostatistics from the University of Washington. Her scientific interests include estimating the health effects of occupational and environmental exposures, air pollution health effects, air pollution epidemiology, observational study design, and group information in observational studies. She is an active member of the EPA Northwest Center for Particulate Matter and Health, as well as a collaborator on several occupational and environmental health studies. Her statistical methods research addresses the role of exposure and study design in estimating health effects from observational studies.

Dr. Sheppard just completed the project "Methods for Using Group Information in Epidemiology," an R29 grant funded by NIEHS. She was principal investigator (PI) on the sub-contract "Testing the Metals Hypothesis in Spokane" funded by the Mickey Leland Center, as well as PI on two sub-projects of the PM Center: "Statistics and Data Core," and "PM Statistical Methods." She is an external scientific reviewer for the Fresno Asthmatic Children's Environment Study based at University of California, Berkeley, and for the Environmental Lung Center at National Jewish in Denver.

Dr. Ira B. Tager

Dr. Ira Tager is currently a Professor of Epidemiology in the School of Public Health, University of California, Berkeley. He holds an B.A. from Colgate University (1965, summa cum laude); an M.D. from the University of Rochester (1969, with honors); and M.P.H. from the Harvard School (1973, with a concentration in epidemiology). For the past 30 years, Dr. Tager has conducted epidemiological studies on the effects of environmental pollutants on the occurrence of lung disease. Until 1993, the focus of this work was on second-hand tobacco smoke. Since that time, the emphasis has been on ambient air pollution.

Dr. Tager has published a number of papers on ozone-related health effects and effects of particulate matter (PM). In addition, he authored the section on health effects related to long-term exposure to ozone in the EPA's 1996 Air Quality Criteria Document for Ozone and Related Photochemical Oxidants." Dr. Tager has funded grants related to the health effects of ozone (NIH); PM and other pollutant effects on childhood asthma (California Air Resources Board [CARB]); effects in reduction of ambient pollutant levels over 20 on health in the LA Basin (CARB). He has contributed to the State of California Ozone Evaluation. Dr. Tager serves on the Research Committee for the Health Effects Institute and the advisory panel for PM for CARB; and has served as Chair of the Assembly on Occupational and Environmental Health of the American Thoracic Society.

Dr. George D. Thurston

Dr. George Thurston is an Associate Professor of Environmental Medicine at the New York University (NYU) School of Medicine. He received his Sc.D. from the Harvard University School of Public Health in 1983; his M.S. from the Harvard University School of Public Health in 1978; and his A.B. in Environmental Studies and his Sc.B. in Environmental Engineering from Brown University in 1974. With respect to his postdoctoral training, Dr. Thurston was a Research Fellow at the Harvard University Kennedy School of Government, Energy and Environmental Policy Center, from 1982-1984.

Dr. Thurston's other responsibilities include serving as the Deputy Director of NYU's U.S. EPA Particulate Matter (PM) Health Research Center, and he is also Director of the Community Outreach Program for the Department of Environmental Medicine's NIEHS Center of Excellence. Dr. Thurston is a member of the American Lung Association's National Action Panel on Environment, the American Thoracic Society's Environmental and Occupational Health Program Committee, and the International Society of Environmental Epidemiology. He has recently served on the New York State Air Management Advisory Committee to the N.Y. Department of Environmental Conservation and the National Academy of Sciences' Committee on the Health Effects of Waste Incineration.

Dr. James S. Ultman

Dr. James Ultman is a Distinguished Professor, Department of Chemical Engineering and Department of Bioengineering, and Chair, of the Intercollege Graduate Degree Program in Physiology, at the Pennsylvania State University. Dr. Ultman earned his B.S. in Chemical Engineering (1965) from the Illinois Institute of Technology; and earned his M.S. (1967) and Ph.D. (1969) in Chemical Engineering, from the University of Delaware. He was an NIH Postdoctoral at the University of Minnesota from 1969-70.

Dr. Ultman's areas of expertise are: chemical engineering, biomedical engineering, respiratory physiology, the measurement and simulation of the respiratory dosimetry of ozone, and the quantification of ozone reaction with respiratory antioxidants.

Dr. Ultman's most-recent prior service on advisory committees includes: (1) Scientific Advisory Committee, CIIT Centers for Health Research, Research Triangle Park, NC, (2001-2003); (2) NIEHS Superfund Hazardous Substances Basic Research Program: Study Section Member (1999); (3) EPA Scientific Review Panel: Air Quality Criterion for Ozone (1993); (4) EPA Scientific Review Panel: Research Needs for Ozone (1996); (5) EPA and Basic Acrylic Monomer Manufacturers Workshop: Nasal Dosimetry-Issues and Approaches (1998); (6) EPA and Health Canada Review Panel: Formaldehyde-Assessment for Carcinogenicity (1998); and (7) NIH PPG Scientific Advisor: Mechanism of Heterogeneity in the Lungs, University of Washington (1998-present).

Dr. Ultman's sources of recent grant and/or other contract support funding include: (1) "Distribution of Chlorine in Intact Human Lungs" (grant title), Chlorine Institute, 1996-1998 (Sponsor/Dates); (2) "Ozone Exposure and Dose Delivered to Human Lungs," National Institutes of Health (NIH), 1998-2003; (3) "Distribution of Ozone in Intact Human Lungs: Effect of Intersubject Variability," Health Effects Institute, 1999-2001; and (4) "Mechanism of Species-Dependent Lung Injury," NIH, 2003-2006.

Dr. George Wolff

Dr. George Wolff is presently a Principal Scientist with the General Motors Public Policy Center. He holds a B.S. in Chemical Engineering from the New Jersey Institute of Technology (1969), an M.S. in Meteorology and Air Resources Management from New York University (1970), and a Ph.D. in Environmental Sciences (Water, Air and Waste Management) from Rutgers University (1974). Dr. Wolff was an Adjunct Professor, Department of Civil and Environmental Engineering, Michigan State University, from 1998 to 2000 and at the University of Michigan, School of Public Health, from 1991 to 1995.

Dr. Wolff has previously served as both a Member and Chair (1992-1996) of EPA's Clean Air Scientific Advisory Committee (CASAC), including the period during the CASAC conducted its previous iteration of National Ambient Air Quality Standard (NAAQS) reviews of ozone (1993-1996) and particulate matter (1994-1996). Dr. Wolff presently serves as a Consultant to the CASAC Particulate Matter Review Panel, and he has also served on numerous other CASAC panels and SAB committees, including the Research Strategies Advisory Committee (RSAC) (1992-1994), the Advisory Council on Clean Air Compliance Analysis (1995-1998), the Air Quality Modeling Subcommittee (1997-1998), and the Health and Ecological Effects Committee

(1997-1998). Dr. Wolff is a fellow member of the Air & Waste Management Association and a member of the American Meteorological Society and the American Association of the Advancement of Science (AAAS).

Dr. Wolff's other professional advisory activities and associations include: National Research Council (NRC), Committee to Review the U.S. Department of Energy (DOE), Office of Fossil Energy, Research Plan for Fine Particulates (1999-2000); Health Effects Institute (HEI), Advisory Board for the Epidemiology Reanalysis Project (1998-2001); University of Michigan, School of Public Health, External Advisory Committee for the Michigan Center for the Environment and Children's Health (1998-present); reviewer for various EPA, EPRI and HEI research programs (1979-present); California Air Resources Board (CARB) Management Advisory Group for the Southern California Air Quality Study (SCAQS) and CARB Emissions Working Group for the Southern California Air Quality Study (1985-1991); CARB Statewide Modeling Coordination Group (1989-1991); Michigan Department of Natural Resources' Southeast Michigan Ozone Modeling Committee, (1989-1990); Lake Michigan Ozone Study (LMOS) Advisory Committee (1990-present); and the Southeast Michigan Ozone Study (SEMOS) Management Committee (1992-present).

Dr. Wolff receives no funding outside of General Motors.

Dr. Judith Zelikoff

Dr. Judith Zelikoff is currently a tenured Associate Professor in the Department of Environmental Medicine at the New York University School of Medicine. She holds an M.S. in microbiology (1976) from Fairleigh Dickinson University (Teaneck, NJ) and a Ph.D. in experimental pathology (1982) from the University of Medicine and Dentistry of New Jersey. Upon award of the degree, Dr. Zelikoff was an NIH trainee with Dr. Morton Lippman in the Department of Environmental Medicine at NYU School of Medicine. Her postdoctoral training in toxicology was supported by a Fellowship from the National Heart, Lung, and Blood Institute (NHLBI). After two years of post-doctoral training, she assumed a research faculty position at NYU.

Dr. Zelikoff's areas of expertise are: (1) pulmonary immunotoxicology (characterization of inhaled metal (i.e., cadmium, chromium), gaseous and particulates (ozone, sulfuric acid), and airborne pollutant mixtures (i.e., woodsmoke, cigarette smoke, ambient particulate matter) on pulmonary immune defense mechanisms and host resistance against infectious disease); (2) environmental toxicology/ecoimmunotoxicology (effects of aquatic pollutants on the immune responses of fish, development of immune biomarkers, and alternative animal models for immunotoxicological studies); and (3) developmental immunotoxicology (effects of prenatal chemical exposures on immune defense mechanisms of the neonate). She is currently on two National Academy of Sciences (NAS) Committees, one of which is examining the effects of Gulf War Chemicals on Soldier Health (IOM), and the other on guidelines for exposure to spacecraft water (NRC).

Dr. Zelikoff's recent grant support funding includes: the National Institute of Occupational Safety and Health (NIOSH; Role of Ozone in Chromium Carcinogenicity) (1999-2003); National Institute of Environmental Health Sciences (NIEHS; Role of Cytokine Metabolism in Ozone

Immunotoxicity) (2001-2003); EPA (Role of PM-associated Metals in Exacerbating Infectious Pneumonia) (1999-2004); the U.S. Army Biomedical Research Development Laboratories (1992-2003); the Hudson River Foundation (2003-2004); and Philip Morris Inc. (2001-2005). She also has over 70 peer-reviewed publications and over 20 book chapters in the area of immunotoxicology and serves either as associate editor or editorial board member of 10 journals including Toxicology and Applied Pharmacology, Toxicology, and Journal of Toxicology and Environmental Toxicology.

Dr. James V. Zidek

Dr. Jim Zidek is a Professor of Statistics, in the Department of Statistics, at the University of British Columbia. His areas of expertise include: environmetrics; mapping spatial pollution fields; designing environmental monitoring networks; environmental health risk analysis. Dr. Zidek received his B.Sc. (with honors) and M.Sc. from the University of Alberta in 1961 and 1963, respectively. He was awarded his Ph.D. from Stanford University in 1967. Selected distinctions for Dr. Zidek include: Fellowships for the American Statistical Association and the Institute of Mathematical Statistics; the Izaak Walton Killam Senior Fellowship, 1989/90, and the Izaak Walton Killam Research Prize, 2001; the Distinguished Achievement Medal, Environmental Statistics Section of the American Statistical Association, 2000; and the Gold Medal, Statistical Society of Canada, 2000. He is also an Elected Fellow, Royal Society of Canada, 2003.

Dr. Zidek's leadership positions include: founding Head of Statistics (1984-89); Head of Statistics (1997-2002); President, Statistical Society of Canada (1988); Chair, Statistical Sciences Grant Selection Committee; Natural Sciences and Engineering Research Council of Canada (NSERC), (1980); Mathematical Sciences Group Chair, NSERC (1988-91); Editor, *Statistical Science*, 1987-92; Editor, CRC/Chapman Hall, 1998-present; and Editor, *Encyclopedia of Environmetrics*, 1999-present. Since 1999, he has served on the advisory committee for EPA's Northwest Research Center for Particulate Air Pollution and Health, at the University of Washington. He also served on the Methodological Advisory Committee, Statistics Canada, from 1985 to 1987, and from1991 to 1994; and on the Councils, Institute of Mathematical Statistics (1996-99) and International Society of Bayesian Statistics (1996-98).

Dr. Zidek's recent sources of grant and other contract support include: (1) ManTech Corp., Interpolating PM2.5 fields, $35,000, 00/01; (2) NSERC, Likelihood theory and spatial mapping, $30,000 p.a., 2002-2006; and EPSRC of the UK, Predicting personal exposure to PM10, 5000 pounds, 2002.